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EXAMINER	
CHOW, CHARLES CHIANG	

ART UNIT	PAPER NUMBER
2618	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ip.department.us@nxp.com

Office Action Summary	**Application No.** 10/535,555	**Applicant(s)** RAZZELL, CHARLES	
	Examiner CHARLES CHOW	**Art Unit** 2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 15 May 2008.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-20 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-20 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Detailed Action

1. This office action is for the amendment filed on 5/15/2005.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith et al. [US 6,512,472 B1] in view of Pakravan et al. [US 6,259,391 B1].

For claim 1, Smith et al. [Smith] teaches a method of operating a radio receiver [Fig. 1 to Fig. 10 & its description in the specification], having an analog portion coupled to an A/D converter [circuitry before ADC 114, Fig. 1], and

the A/D converter coupled to a digital signal processing portion [ADC 114 coupled to digital processing portion, direct down DDC 118 & demodulator 120], the method comprising

the obtaining a wideband signal power estimate of signal power reaching the A/D converter by measuring a signal between the A/D converter and the digital signal processing portion

[the controller 116 measures signal power level of the samples from ADC 114, for the plural, wide, frequency bands, by adjusting the cutoff frequency of the filters 106/108 & controlling the gain of amplifier 112 in front of the ADC 114, to the desired level, to avoid the signal level clipping, col. 4, line 31 to col. 5, line 8 & abstract]; and

responsive to the wideband signal power estimate, preventing the signal power reaching the A/D converter from exceeding a maximum allowable input [controller 116 selects the

cutoff frequency of the filter 106/108, the gain of 112, to avoid signal level clipping, col. 4, line 59 to col. 5, line 8; to prevent the ADC from clipping in step 636, col. 12 lines 35-61].

Smith fails to teach the estimate of total signal power reaching the A/D converter, to prevent the signal power reaching the A/D converter from exceeding a maximum allowable input.

Pakravan et al. [Pakravan] teaches the estimate of total signal power reaching the A/D converter, to prevent the signal power reaching the A/D converter from exceeding a maximum allowable input

[the total power estimator 42, at the output of A/D converter 34, measures the total power at the input of the A/D 34, for controlling the gain of AGC 23, to prevent the maximum signal level inputting to the A/D 34, to adjust the amplitude of the received signal via AGC 23, & also having the signal clipping ratio analyzers 44/46, Fig. 5/description, & col. 8, line 49 to col. 9, line 21; summary of invention], to prevent A/D from clipping. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Smith with Pakravan's measuring total power for controlling the gain at the input of the A/D convert, such that A/D converter could be provide better reception signal by avoiding input signal amplitude clipping.

For claim 2, Smith teaches the method o f claim 1 above,

wherein preventing the wideband signal power reaching the A/D converter from exceeding a maximum allowable input amplitude comprises determining that a wideband signal power [power level determined by controller 116, col. 5, lines 1-8] greater than a predetermined first threshold [the P_A threshold in col. 8, line 46 to col. 9, line 3; the acceptable threshold P_A in col. 7, lines 39-45, Fig. 4] and

responsive thereto, reducing the gain of at least one amplifier coupled to an input terminal of the A/D converter [to prevent the signal level clipping at the input of the ADC across each frequency bands, col. 7, lines 25-30].

Smith fails to teach the estimate of total signal power reaching the A/D converter, to prevent the signal power reaching the A/D converter from exceeding a maximum allowable input.

Pakravan teaches the estimate of total signal power reaching the A/D converter, to prevent the signal power reaching the A/D converter from exceeding a maximum allowable input

[the total power estimator 42, at the output of A/D converter 34, measures the total power at the input of the A/D 34, for controlling the gain of AGC 23, to prevent the maximum signal level inputting to the A/D 34, to adjust the amplitude of the received signal via AGC 23, & also having the signal clipping ratio analyzers 44/46, Fig. 5/description, & col. 8, line 49 to col. 9, line 21; summary of invention], to prevent A/D from clipping. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Smith with Pakravan's measuring total power for controlling the gain at the input of the A/D convert, such that A/D converter could be provide better reception signal by avoiding input signal amplitude clipping.

3. Claims 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith in view of Pakravan, as applied to claim 2 above and further in view of Abbey [US 6,151,354] and Van Bezooijen et al. [US 7,233,631 B2].

For claim 3, Smith teaches the method in claim 1 above. Smith, Pakravan fail to teach the sigma-delta converter.

Abbey teaches the sigma-delta A/D converter that includes a decimation and filtering processing chain [the sigma-delta A/D 106 in Fig. 5, the decimation filer 108, the low pass filter 110 & the average peak detection 121, all together, for the claimed sigma-delta A/d converter], &

Van Bezooijen et al. [Van Bezooijen] teaches the DC level offset detection at 15-1 is positioned in between DFI and filter 17-1, & having an amplitude detection 19 [the sole Figure & its corresponding description]. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Smith's Adc 114 with Pakravan's, Abbey's teaching above, together with the consideration of Van Bezooijen's location of the DC level offset detection 15-1, such that the Abbey's average peak detection 110 can be also moved to the position in between the decimation 108 & low pass filter 110, in order to measure the power level of a wide band signal.

For claim 4, Smith further teaches the detecting an in-band signal power greater than a predetermined second threshold [the Po of the desired threshold, as the second threshold, col. 7, lines 39-45], and

responsive thereto, reducing the gain of at least one amplifier coupled to an input terminal of the ADC [to limit the converted digital codes from ADC, col. 7, lines 50-65; reducing the gain in col. 7, lines 9-30; to avoid clipping at the input of ADC 114].

4. Claims 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith in view of Pakravan, as applied to claim 1 above, and further in view of Shi [US 2005/0079,842 A1].

For claim 5, Smith teaches the method of claim 1 above, but fails to teach the placing the first variable gain amplifier in a low gain state if a wide-band signal power is greater than a first threshold.

Shi teaches the method for placing the first variable gain amplifier [LNA 210] in a low gain state [reducing the gain in step 604] if a wide-band signal power is greater than a first threshold [step 602, the wide band Rssi_A is greater than threshold_A], to avoid the intermodulation interference. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to upgrade Smith with Shi's detecting of wide band signal power, such that the receiver could avoid the intermodulation interference.

For claim 6, Smith teaches the method of claim 1 above. Smith & Pakravan fail to teach the wide-band signal power is less than a first threshold, together with the narrow band signal power is greater than a second threshold.

Shi teaches the wherein the radio receiver [200] includes a first variable gain amplifier [LNA 210], and the method further comprises

determining that a wide-band signal power is less than a first threshold [step 602, wide power Rssi_A is less than thres_A, then, go to step 608]; and placing the first variable gain amplifier in a low gain state if a narrow-band signal power is greater than a second threshold [reducing the gain of LNA at 616 after narrow power Rssi_B is greater than thres_C at 614]. It would have been obvious to one of ordinary skill in the art at the time the invention was made to upgrade Smith, Pakravan with Shi's teaching, such that the first variable gain amplifier could be reduced based on the detected narrow band power level.

5. Claims 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith in view of Pakravan, Shi, as applied to claim 6 above, and further in view of Walker et al. [US 2005/0208,919 A1].

For claim 7, Smith teaches the method of claim 1 above, but fails to teach the low gain state.

Shi teaches the wherein the first variable gain amplifier is placed in a low gain state if the narrow-band power is greater than the second threshold [the narrow Rssi_B is greater than thres_C at step 612, then, to reduce the gain of LNA, step 616], using the same rationale in claim 3 above to combine Shi to Smith.

Smith, Pakravan, Shi fail to teach the hysteresis value for the threshold.

Walker teaches the hysteresis value for the threshold [the hysteresis for the gain stepping in Fig. 4C, for the gain rising & gain falling, low gain in table 1, paragraph 0078-0080], for reliable controlling the gain changes with hysteresis. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to upgrade Smith, Pakravan, Shi with Walker's hysteresis, in order to reliably controlling the gain changes with hysteresis.

For claim 8, Smith teaches the method of claim 1 above, but fails to teach the high gain state if the narrow-band power is less than the second threshold.

Shi teaches the wherein the first variable gain amplifier [LNA] is placed in a high gain state [step 706] if the narrow-band power is less than the second threshold [the narrow Rssi_B is less than thres_C at step 612, then, to step 702, to increase the gain of LNA at step 706].

Smith, Pakravan, Shi fail to teach the hysteresis value for the threshold.

Walker teaches the hysteresis value for the threshold [the hysteresis for the gain stepping in Fig. 4C, for the gain rising & gain falling, low gain in table 1, paragraph 0078-0080], using the same reasoning in claim 8 above to combine Walder to Smith, Pakravan, Shi.

For claim 9, Smith teaches the method of claim 1 above, but fails to teach the same hysteresis value.

Walker teaches the wherein the first hysteresis value and the second hysteresis value are the same [the same hysteresis value, from L1-Fall going towards L1-Rise or from L1-Rise going towards L1-Fall, in Fig. 4C for raising the gain or reducing the gain], using the same rationale in claim 8 above to combine Walder to Smith, Pakravan, Shi.

6. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takatz et al. [US 7,046,749 B2] in view of Hughes-'676 A1 and Shi-'842 A1.

For claim 10, Takatz et al. [Takatz] teaches a method of preventing saturation of a sigma-delta A/D converter in a radio receiver [Fig. 1, Fig. 5A-5C & the description in specification, claims 1, 6-7; the AGC loop coupled to VGA 12, to limit the signal clipping by ADC 14, col. 3, line 65 to col. 4, line 8 & col. 4, lines 41-48; <u>to limit the clipping by ADC with the Agc loop 18 in col. 4, lines 3-8</u>], having digital channel selectivity circuitry [digital filter 17-I, 17-Q, Fig. 1].

Takatz teaches the <u>signal to the ADC is band limited, & the ADC is operated normal without the aliasing signal component generated by the down conversion in col. 2, lines 47-54; Besides, a down conversion mixer is inherently generating the interfering harmonic having the aliasing components, & the signal clipping is inherently generating distortion having interfering harmonics, such that Takatz is suffering from the interfering harmonics, such tha Shi is obviously can be combined to Takatz, to improve the situation.</u>

Hughes teaches the wide band power estimation [the wide band power measure 106 obtains the total wide power at the input of A/D, Fig. 1, paragraph 0008-0009; step 302 in paragraph 0015], in order to control the front end gain based on the detected wide band power level. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to upgrade Takatz with Hughes' wideband power estimation,

such that the front end gain could be controlled according to the detected wide band power level.

Takatz & Hughes fail to teach the obtaining a wide-band power estimation and a narrow-band power estimation; the reducing an amplifier gain of a first one of a plurality of amplifiers if the wide-band power estimation is greater than a first predetermined value; if the wide-band power estimation is not greater than the first predetermined value, reducing the gain of at least one of the plurality of amplifiers if the narrow-band power estimation is greater than a second predetermined value.

Shi teaches the comprising obtaining a wide-band power estimation [218, paragraph 0043] and a narrow-band power estimation [220, oo43]; reducing an amplifier gain [step 604] of a first one of a plurality of amplifiers [first amplifier LNA 210] if the wide-band power estimation [wide power Rssi_A] is greater than a first predetermined value [if wide power Rssi_A is greater than thres_A at step 602]; and

the wide-band signal power estimation [218, paragraph 0043] is not greater than a first predetermined value [step 602, wide power Rssi_A is less than thres_A, then, go to step 608], reducing the gain of at least one of the plurality of amplifiers if a narrow-band power is greater than a second predetermined value [reducing the gain of LNA at 616 after narrow power Rssi_B is greater than thres_C at 614], to avoid the intermodulation interference [paragraph 0044]. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to upgrade Takatz, Hughes with Shi's detecting of wide band signal power, such that the receiver could avoid the intermodulation interference.

7. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takatz in view of Hughes, Shi, as applied to claim 10 above, and further in view of Abbey-'354 and Van Bezooijen-'631 B2].

For claim 11, Takatz teaches the method [Fig, 1, Fig. 5A-5C, its description & claims 1, 6-7], wherein the first predetermined value is selected [the in this instance, selecting a -3 dBm threshold, col. 4, lines 55-63] so as to reduce the occurrence of ADC saturation due to out-of-band signal power [to limit the signal clipping at ADC 14, col. 3, line 65 to col. 4, line 8].

Takatz in view of Hughes, Shi, fail to teach the wideband power estimation from an intermediate point between the decimation &filter chain, associated with the sigma-delta converter.

Abbey teaches the <u>sigma-delta A/D converter</u> that <u>includes a decimation and filtering processing chain</u> [the sigma-delta A/D 106 in Fig. 5, the decimation filer 108, the low pass filter 110 & the average peak detection 121, all together, for the claimed sigma-delta A/d converter], &

Van Bezooijen et al. [Van Bezooijen] teaches the DC level offset detection at 15-1 is positioned in between DFI and filter 17-1, & having an amplitude detection 19 [the sole Figure & its corresponding description]. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Smith's Adc 114, in view of Shi, with Abbey's teaching above, together with the consideration of Van Bezooijen's location of the DC level offset detection 15-1, such that the Abbey's average peak detection 110 can be also moved to the position in between the decimation 108 & low pass filter 110, in order to measure the power level of a wide band signal.

8. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takatz [US 7,046,749 B2] in view of Shi-'842 A1 and Walker-'919 A1.

For claim 12, Takatz teaches a method of operating a radio receiver [Fig. 1, Fig. 5A-5C & its description in specification, claims 1, 6-7] having a plurality of serially coupled variable gain amplifiers [VGA1 to VGA3, Fig. 5A], and a digital portion [15] that performs, at least partially, a frequency selectivity function [digital filter 17-I, 17-Q, Fig. 1, 160-I/160q in Fig, 5B & its description in specification], but fails to teach the steps a) to g).

Shi teaches a radio receiver an analog down-conversion portion, to provide digital signal via sigma-delta ADC 217[Fig. 2, analog mixer 212], including the method comprising

a) setting each of the plurality of the variable gain amplifiers to a high gain state [setting the LNA to maximum gain in paragraph 0015, for the plurality of amplifiers in 12 of Takatz] ;

b) obtaining a wide-band signal power estimate; c) obtaining a narrow-band signal power estimate [estimating wide, narrow, band power at 218, 222, paragraph 0043];

d) determining if the wide-band signal power estimate is greater than the value of a wide-band threshold, e) setting a first one of the plurality of variable gain amplifiers to a low gain state if the determination in (d) is affirmative [reducing the gain in step 604, if the wide band Rssi_A is greater than threshold_A at step 602, Fig. 6],

f) if the determination in (d) is negative [N from step 602], determining if the narrow-band signal power estimate is greater than the value of a narrow-band threshold [narrow band power Rssi_B is compared with threshold thres_C at 612]; and

g) setting the first one of the plurality of variable gain amplifiers to a low gain state if the narrow-band signal power estimate is greater than the first narrow-band threshold value [reducing the gain of LNA at step 616 if narrow power Rssi_B is greater than thres_C at step 612], to avoid the intermodulation interference [paragraph 0044], the reducing the

clipping & out of band signal [col. 1, lines 36-58], the clipping generates the distortion with the out of band harmonics, which causes Takatz to suffer the interfering harmonics from the clipping effect.

Takatz & Shi are both are teachings of the automatic gain control for a receiver, to limit the ADC clipping via AGC loop. They are both in the same field of teachings. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to upgrade Takatz with Shi's detecting of wide band signal power level with the threshold, such that the receiver reception could be better by avoiding the intermodulation interference.

Takatz, Shi fail to teach the hysteresis.

Walker teaches the hysteresis value for the threshold [the hysteresis for the gain stepping in Fig. 4C, for the gain rising & gain falling, low gain in table 1, paragraph 0078-0080], for reliable controlling the gain changes with hysteresis. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to upgrade Takatz, Shi with Walker's hysteresis, in order to reliably controlling the gain changes with hysteresis.

9. Claims 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takatz in view of Shi, Walker, as applied to claim 12 above, and further in view of Husted et al. [US 2003/0012,313 A1].

For claim 13, Takatz teaches the method as shown in claim 12 above. Shi teaches the wide band threshold, thres_A at step 602. Takatz, Shi, Walker fail to teach the further comprising dynamically assigning a value to the threshold.

Husted et al. [Husted] teaches the dynamically assigning a value to the threshold [the saturation threshold can be down loaded in paragraph 0041], in order to adjust the threshold values. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to upgrade Takatz, Shi & Walker with Husted's adjustable threshold, in order to avoid the saturation of the ADC.

For claim 14, Takatz teaches the method together with Shi, Walker in claim 13, although Shi teaches the narrow band threshold, thres_C at step 612, but fails to teaches the dynamically assigning a value to the threshold.

Husted et al. [Husted] teaches the dynamically assigning a value to the threshold [the saturation threshold can be down loaded in paragraph 0041], in order to adjust the threshold values. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to upgrade Takatz, Shi & Walker with Husted's adjustable threshold, in order to avoid the saturation of the ADC.

10. Claims 15-17, 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shi in view of Takatz, and Padovani.

For claim 15, Shi teaches a radio receiver [Fig. 2] comprising an analog down converter [A/D in 212] including a plurality of serially coupled variable gain amplifiers [210, 216], an analog-to-digital converter [217] connected to one of the plurality of variable amplifiers [216, 210], the AGC circuitry configured to received wide band signal power estimation [Rssi_A receives, detects, wide band power, & send to agc 222, Fig. 2 & its corresponding description] obtained by measuring a signal [input to Rssi_A 218] between the ADC converter [217] and the selectivity circuitry [Saw 208] and a narrow power estimate [220, abstract].

Shi fails to teach a digital base band processor connected to the ADC converter; the digital baseband processor including selectivity circuitry.

Takatz teaches a digital base band processor [15, 24, 21-23, Fig. 1] connected to the ADC converter [ADC 24] including selectivity circuitry [digital filters 17-I, 17-Q], in order to demodulate the converted digital samples. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to upgrade Shi with Takatz's digital base band processing, in order to demodulate the digital samples.

For claim 16, Shi fails to teach the plurality of variable gain amplifiers VGA are coupled to the automatic gain control circuitry. Takatz teaches the wherein the plurality of variable gain amplifiers VGA are coupled to the automatic gain control circuitry [VGA1 to VGA 3, Fig. 5A, coupled to the AGC loop via D/A 214], such that the gain of the VGAs could be automatically controlled via the AGC, as the rationale to combine Takatz to Hughes & Shi.

For claim 17, Shi teaches the sigma-delta analog-to-digital converter [Σ-Δ ADC 217, Fig. 2].

For claim 20, Shi fails to teach the digital filter. Takatz teaches wherein the selectivity circuitry comprises digital filters [digital filter 17-I, 17Q], using the same rationale in claim 15 to combine Takatz to Hughes & Shi.

11. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shi in view of Takatz, as applied to claim 15 above, and further in view of Ciccarelli et al. [US 6,498,926 B1].

For claim 18, Shi teaches the wherein the automatic gain control circuitry 222 for comparing wide band threshold, thrs_A at step 602 & narrow band threshold, thrs_C at step 612, but fails to teach the configured to receive threshold value.

Shi, Takatz fail to teach the AGC circuitry is further configured to receive a wide band & narrow band threshold value.

Ciccarelli et al. [Ciccarelli] teaches the adjusting the rssi threshold based on the BER, FER performance [col. 12, lines 39-54], in order to maintaining the signal quality. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to upgrade Hughes, Shi, Takatz with Ciccarelli's adjustable rssi threshold, in order to maintaining the signal quality.

12. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shi in view of Takatz, Ciccarelli, as applied to claim 18 above, and further in view of Hughes [US 2003/0207,674 A1].

For claim 19, Shi teaches the radio receiver [Fig. 2, Fig. 5A-5C], Shi & Ciccarelli fail to teach the wherein the automatic gain control circuitry is further configured to receive at least one hysteresis value.

Hughes teaches the wherein the automatic gain control circuitry [AGC 170 & associated circuitry in Fig. 1] is further configured to receive at least one hysteresis value [the hyteresis can be adjusted to +/-6 dB in paragraph 0040], to compensate the threshold changes for the AGC. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to upgrade Shi, Takatz & Ciccarelli with Hughes' adjustable hysteresis, in order to compensate the threshold changes, with adjustable hyteresis, for the AGC.

Response to Argument

13. Applicant's arguments with respect to claims 1-20 have been considered but are moot in view of the new ground(s) of rejection.

Regarding applicant's argument for the no teachings for the estimate of total signal power reaching the A/D converter, to prevent the signal power reaching the A/D converter from exceeding a maximum allowable input [pages 6-7 of applicant's last amendment],

Pakravan [US 6,259,391 B1] teaches the estimate of total signal power reaching the A/D converter, to prevent the signal power reaching the A/D converter from exceeding a maximum allowable input

[the total power estimator 42, at the output of A/D converter 34, measures the total power at the input of the A/D 34, for controlling the gain of AGC 23, to prevent the maximum signal level inputting to the A/D 34, to adjust the amplitude of the received signal via AGC 23, & also having the signal clipping ratio analyzers 44/46, Fig. 5/description, & col. 8, line 49 to col. 9, line 21; summary of invention].

Regarding applicant's argument for the no teaching that Takatz suffers the interfering harmonics from the clipping effect, in order to combining of Shi's teachings to Takatz,

Takatz does suffering the interfering harmonics from the clipping effect

[the signal to the ADC is band limited, & the ADC is operated normal without the aliasing signal component generated by the down conversion in col. 2, lines 47-54; Besides, a down conversion mixer is inherently generating the interfering harmonic having the aliasing components, & the signal clipping is inherently generating distortion having interfering harmonics, such that Takatz is suffering from the interfering harmonics, such tha Shi is obviously can be combined to Takatz, to improve the situation].

Regarding the argument for the no teaching for the measuring of Rssi between the ADC and the selective circuit [page 9 of applicant's last amendment],

Takatz teaches the measuring wideband signal at 22 for between ADC 14 and selective circuit 17i/17Q [Fig. 1], such that comparison 23 can produce a signal for the RSSI calculation [Fig. 1 & its corresponding description in the specification].

Conclusion

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles Chow whose telephone number is (571) 272-7889. The examiner can normally be reached on 8:00am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban can be reached on (571) 272-7899. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system.

Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Charles Chow /C. C./
Examiner, Art Unit 2618
June 23, 2008.

/Edward Urban/

Supervisory Patent Examiner, Art Unit 2618